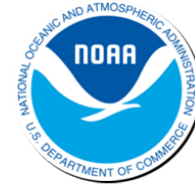


NOAA/NWS Glasgow, MT
Fort Peck Lake Ice: Facts and Stats
2/12/2021

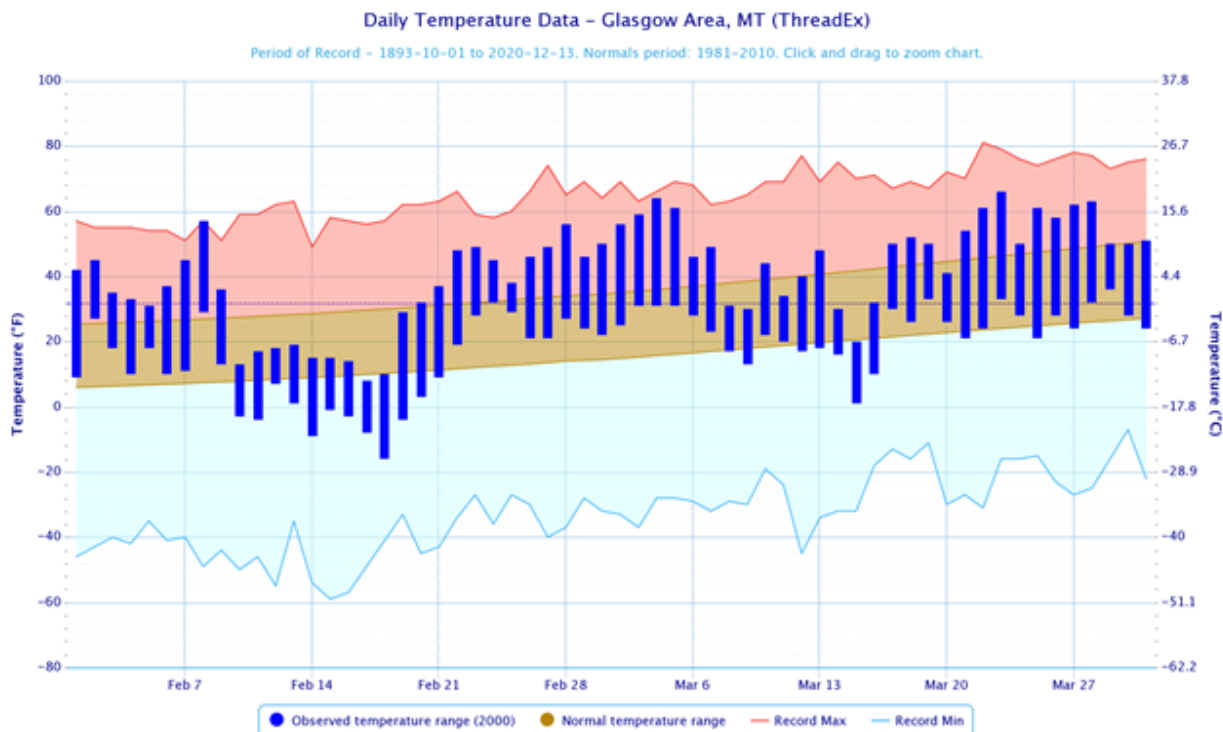


Thanks to the [Fort Peck US Army Corps of Engineers](#) office, we have the annual lake ice on/ice out dates. We love looking at data and trends, and we thought we'd share some fun facts and stats that may be of interest to outdoor enthusiasts (and other weather geeks) in the region.

The earliest the lake has ever been declared frozen was Nov 29, 1955, and the latest was Feb 24, 2006. There were actually two years the lake never fully froze, the winter of 1986-87, and 1991-92. Those were years when we had a strong **El Niño** event, where the equatorial area in the Pacific Ocean is warmer than normal, sending the jet stream farther north and bringing warmer weather.

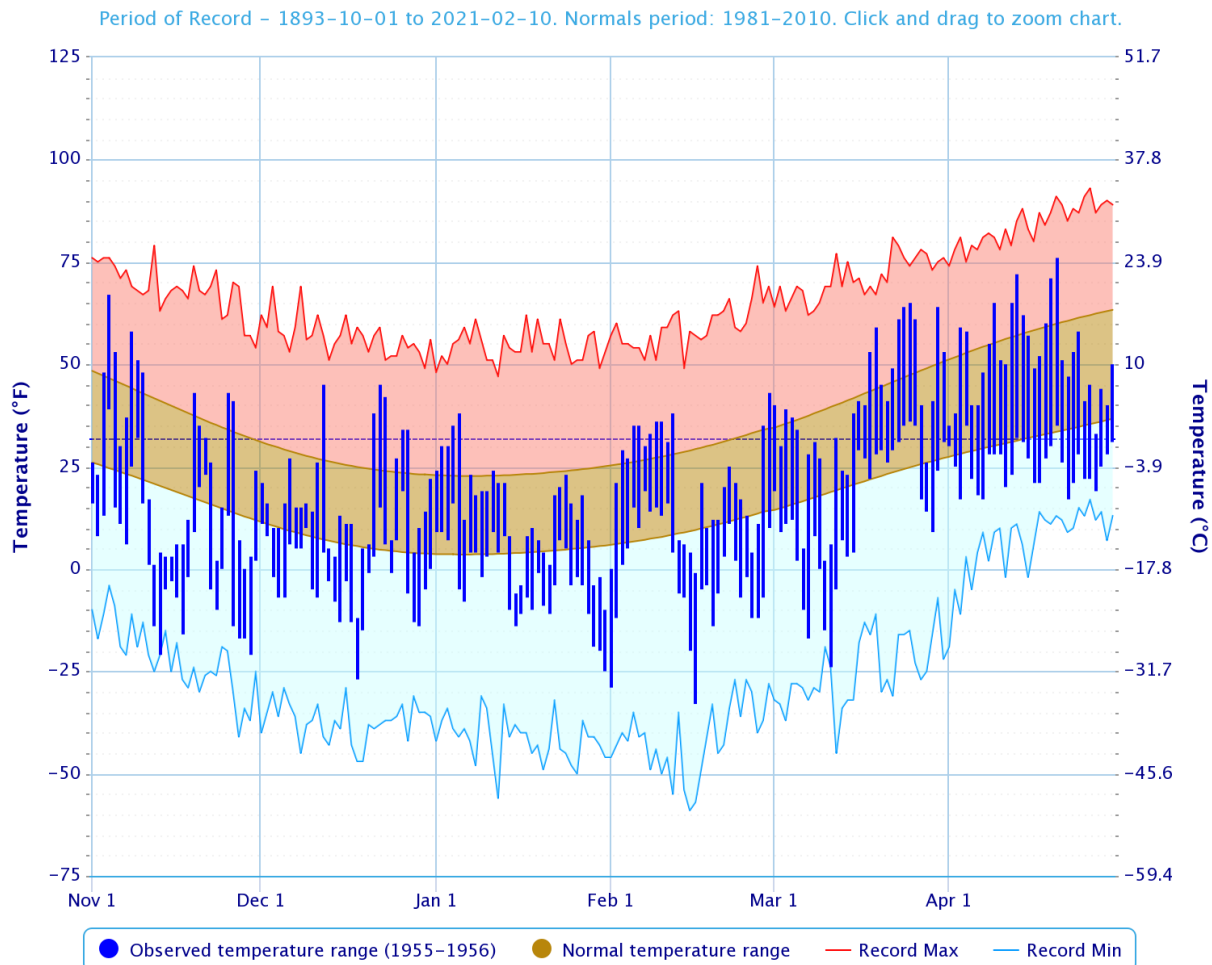
The earliest the ice was declared "out" is March 8, 2000, and the latest the ice lingered to was May 9, 1950.

The **shortest amount of time there was ice on the lake was 23 days**, from Feb 14, 2000 to Mar 8, 2000. Here were the temperatures in February and March 2000:



The **longest there was ice on the lake was 144 days** from Nov 29, 1955 to April 21, 1956. Here were the temperatures that winter, some pretty prolonged cold spells in there, many days the high temperature for the day was well below the normal low temperature for the day:

Daily Temperature Data – Glasgow Area, MT (ThreadEx)



Powered by ACIS

On average, counting the two years the lake didn't freeze, there is ice cover for 90 days. When we are in an **El Niño** pattern, the average is **86.5 days**, and in a **La Niña** pattern (colder than normal equatorial Pacific Ocean temperatures) the average is **101 days**.

One of the things that has really changed for us over the years is the use of satellite imagery to "see" ice on the lake. We have satellites that polar orbiting, they travel from one pole to the other as the Earth rotates below them. So, the scans are generally twice a day. We also don't see the same exact path from day to day because the earth is tilting up to 23 degrees up or down through the years with the seasons.

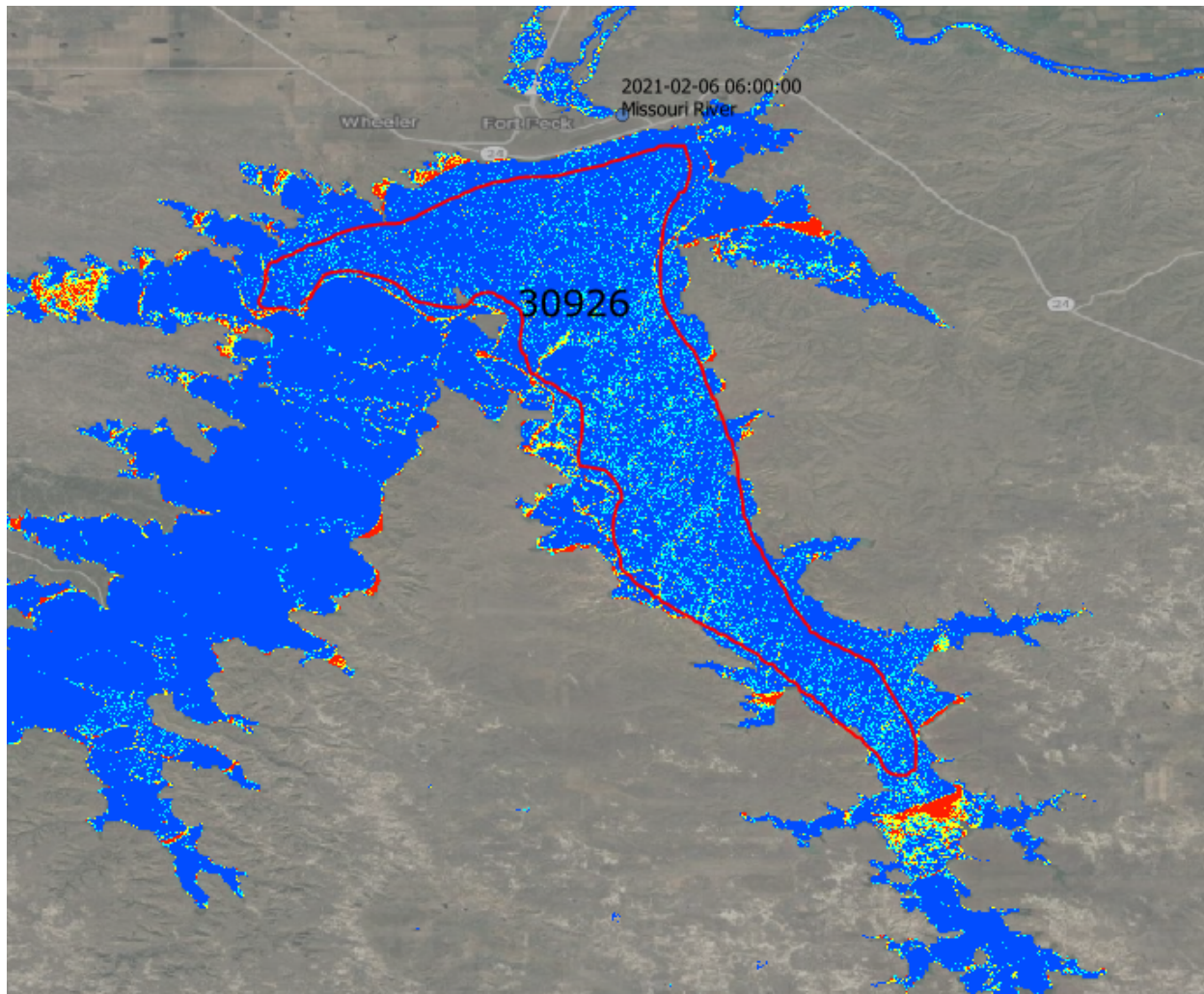
For many years, the [MODIS satellite](#) was our go-to, but if there were clouds in the area, we couldn't see anything on the daytime pass, so this is more anecdotal vs real-time information that we see. Here's a recent MODIS example from Feb 2, 2021, showing ice in the UL Bend and Fourchette Bay areas, and the bottom of the Dry Arm, in the Bone Trail and Hell Creek bays, a little bit near Duck Creek, and ice on the Missouri River well downstream of the spillway. You can also see there's very little snow cover:



Today's MODIS image on Feb 11, 2021 shows some high clouds but you can see the lake is totally ice covered through them, and the ground has some snow cover as well:



These days we have newer satellites that we can see data from, and because of their sensors, it doesn't matter if there is cloud cover or not. The [Sentinel Satellite \(infographic\)](#) was launched by the European Space Agency in 2015 (Sentinel 2-A) and another in 2017 (Sentinel 2-B). Below is a recent satellite image with a discussion about the ice from the National Water Center in Tuscaloosa, AL (a cooperative center between the NWS, USGS and the USACE):



In this image taken on Feb 6th, 2021 at midnight, Ft Peck Lake is showing more ice than previous imaging opportunities with open water limited to the upper fifth of the lake (circled red). The open water signals above the red circled area is ice covered with a smooth probably young ice which has not been compressed by wind. Only a few low order pressure ridges are noted in it. Downstream of the reservoir, the Missouri appears to be mostly open before taking on a mostly closed appearance a few miles above Wolf Point.

The United States has the [Joint Polar Satellite System](#) project which includes a series of satellites, some that are in orbit, and some launching this year and in the next decade. All the data will hopefully reduce the gaps in data we have from day to day, and as technology improves, so does the data that we receive!

Thanks for “geeking” out with us!

Tanja Fransen
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